

Amendment and Presentation of Claims

Please replace all prior claims in the present application with the following claims.

1. (Previously Presented) A method of creating an atrioventricular bypass tract for a heart, comprising:
growing mesenchymal stem cells *in vitro* into a strip with two ends;
attaching one end of the strip onto the atrium of the heart, and
attaching the other end of the strip to the ventricle of the heart, to create a tract connecting the atrium to the ventricle to provide a path for electrical signals generated by the sinus node to propagate across the tract and excite the ventricle.
2. (Original) The method of claim 1, wherein the steps of attaching are performed by suturing.
3. (Original) The method of claim 1, wherein the stem cells are adult human mesenchymal stem cells.
4. (Original) The method of claim 3, wherein the step of growing comprises growing the stem cells in culture on a nonbioreactive material.
5. (Original) The method of claim 4, wherein the step of growing is performed in an environment substantially free of any additional molecular determinants of conduction.
6. (Currently Amended) The method of claim 1, further comprising a step of adding a nucleic acid encoding a protein or peptide or biologically active fragment thereof to the mesenchymal stem cells ~~by electroporation~~.
7. (Previously Presented) The method of claim 6, wherein the nucleic acid encodes a connexin.

8. (Original) The method of claim 7, wherein the connexin includes connexin 40.
9. (Original) The method of claim 7, wherein the connexin includes connexin 43.
10. (Original) The method of claim 7, wherein the connexin includes connexin 45.
11. (Currently Amended) The method of claim 6, wherein the step of adding a nucleic acid ~~gene by electroporation~~ includes adding ~~genes~~ nucleic acids that encode alpha and accessory subunits of an L-type calcium channel.
12. (Currently Amended) The method of claim 7, further comprising adding [a] nucleic acids ~~acid~~ that ~~encodes~~ encode alpha and accessory subunits of an L-type calcium channel.

Claims 13-34 Cancelled

35. (Previously Presented) The method of claim 6, wherein the nucleic acid encodes a hyperpolarization-activated cyclic nucleotide gated (HCN) channel.
36. (Previously Presented) The method of Claim 35, wherein the HCN channel is HCN2.